Edentates. The important fact has recently been determined that some of these tracks show impressions of the fore feet. The latter are somewhat outside of the large footprints, as would naturally be the case if the animal changed its course.

O. C. MARSH

WINTER LIFE AT FORT RAE

IT was not until the beginning of December that our winter really set in, but when it did so there was no mistake about it, as the 1st of the month began with the thermometer at −34°, and except for some mild weather at Christmas, the cold continued through that month. January was colder still, the thermometer once or twice approaching −50°, but in the early part of February a violent storm was accompanied by a remarkable rise of temperature (to +20°), and followed by some mild weather, since which the thermometer has again fallen, reaching −39° a couple of days ago.

This, however, I am informed by the inhabitants, is the mildest winter that has been known for many years, and I have no doubt that a temperature of −60° is not uncommon in severe winters.

It is strange how much less one feels this extreme cold than might be imagined. For the first day or two it was unpleasant, but after that the system seemed to accommodate itself to it, so that a day when the temperature was anywhere above −15° felt quite warm and pleasant. To-day, for instance, I am writing with my window open, although the thermometer is several degrees below zero, and there is a light breeze. There have been days, it is true, when—with the thermometer near −30°, and a strong breeze blowing, filling the air with snowdrift like a dense fog—outdoor exercise was most unpleasant, probably resulting in a frozen face, but such days were not very numerous, a strong wind, even from the cold quarter (the north-west), sending the temperature up in a way that I cannot quite account for.

Now the climate reminds me of Davos Platz, the sun having considerable power; there is, however, more wind. Yesterday the black bulb *in vacuo* read 82°. The only drawback is the intense glare from the snow, which makes coloured spectacles a necessity.

During the first part of the winter we were a little anxious about food, not that we were in any danger of starvation, as the Indians had brought in quantities of dried meat in the autumn, but dried meat is a most unpalatable article of diet, and requires strong teeth and a strong digestion; and then the fishery was not as productive as usual, and the daily produce of the nets (which are set under the ice) was gradually diminishing. At last, however, the deer made their appearance some forty miles from this, and since then our supplies of fresh meat have come in regularly. Rabbits, too, have lately become most numerous. These animals are the great resource of the Indians in times of scarcity, but they are not always plentiful. They are said to attain their maximum once in ten years, when they seem to suffer from a disease which shows itself in lumps on their heads; the following year there is hardly a rabbit to be seen, and then they gradually increase for another ten years.

The winter has passed very uneventfully. On November 17 and two or three following days there were magnetic disturbances of great violence, due, no doubt, to the large sunspot. The displays of aurora at that time, however, were not of any remarkable brilliancy; we have had far brighter ones since, with far less magnetic disturbance. But as a rule the auroras have not been remarkable, though a night seldom or never passes without more or less—the brilliant coloured ones one reads about are conspicuous by their absence. For the most part they are all of the same yellowish colour, showing the single characteristic bright line in the spectroscope, but a bright aurora usually shows more or less prismatic colouring along the lower edge, with a spectrum sometimes of one or two additional bright lines, as a rule towards the violet end of the spectrum, though on one occasion I observed a bright band in the red.

Aurora is very rarely seen until night has quite set in, but on three occasions we have seen it shortly after sunset, and on these occasions it was of a reddish or copper colour, as though partly coloured by the sun's light; it must, I think, have been associated with thin cloud. Its motion and shape showed it to be aurora.

The terrestrial radiation thermometer placed on the snow generally showed a depression of from 10° to 20° on every calm, clear day throughout the winter, even by day when sheltered from the sun. The lowest readings were, as might be expected, with the dry north-west wind. Sometimes the first warning of an impending change of wind to the south-east was given by a rise of this thermometer before the barometer was affected.

A thermometer suspended on the outer wall of the observatory at times read 9° or 10° lower than one in the screen, owing to radiation, and I think that the common practice of exposing unsheltered thermometers may explain some of the low temperatures sometimes reported from this country.

Our daily routine of observations goes on very regularly. Lately wolves have taken to prowling about the neighbourhood, and the observer on duty goes to visit the thermometers armed with a huge club; of course a gun or axe cannot be allowed near the observatory on account of the magnetic instruments.

A remarkable epidemic of influenza made its appearance here in January. We first heard of it among the Indians far to the north-west of this. When it arrived here it attacked every soul in the place—Indians and whites—fortunately in a very mild form, and we hear that Fort Simpson, on the Mackenzie, suffered in the same way. Such an occurrence is most unusual in this country. With this exception we have all enjoyed good health.

We expect the ice to break up about the middle of June, and then will come the reign of the mosquitoes, which make the summer the most disagreeable season of the year in this couutry. Fortunately they do not last long in this latitude, and by the end of August, when we set out on our homeward journey, they will be over.

Fort Rae, March 25

HENRY P. DAWSON

THE NORWEGIAN NORTH-SEA EXPEDITION[1]

II.

DR. MOHN continues his description of Jan Mayen Island as follows:—

"The northern part of Jan Mayen is larger and more elevated than the southern. From its central tract towers the monarch of the island, Mount Beerenberg, an extinct volcano, rising in regal majesty to the height of 6400 feet. The crater measures 4360 feet in diameter. The upper cone, which shelves at an angle of 42° and attains an altitude of about 2000 feet, would, to judge from the black spots so conspicuous on its western declivity, appear to be composed of ashes. The base supporting the cone slopes out in every direction at an angle of from 8 to 10 degrees, and this incline is retained towards the north and east to a depth of at least 1000 fathoms beneath the sea-level. The edge of the crater has a jagged appearance, and the loftiest peak lies on the west side of the mountain Towards the north the wall of the crater has partially given way down to a height of from 600 to 700 feet. The depression thus formed extends northwards towards the north coast of the island, bounded on either side by diverging mountain ridges, that here and there project ledge-like one above the other. This is Beerenberg's *val del bove*, which constitutes the snow-field for the largest of its glaciers, that jut out from the north side of the mountain. On the east side, too, are seen prominent ribs, all of which intersect the nevés of the east side; towards the south and west, however, the surface of the outer cone would appear to be remarkably smooth, at the edge of the crater only being furrowed with shallow depressions between the jags. The base of Mount Beerenberg shelves towards the west, south-west, and north-east, with a comparatively gentle incline, either to the water's edge or the low-lying shore; towards the north and east, however, the descent at the coast is very abrupt, exhibiting precipices 1000 feet high. In several places the base of the mountain is intersected by deep ravines, through which the glaciers find a passage to the sea.

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[1] Concluded from p. 350.

"The height of the southern part of the island cannot be compared to that of the northern. The southern land constitutes a wide plateau, which, in a south-easterly and southerly direction, exhibits numerous precipices along the coast, but, towards the north-west, has extending before it a low-lying foreland, less than 300 feet above the sea. The height of the plateau I estimated at 1000 feet. Rising above this tableland are seen several summits; the loftiest, which has apparently a conical form, and may therefore be of eruptive origin, can hardly attain an altitude of 1600 feet above the sea-level.

"The low middle tract of the island, which is built up of compact masses of lava, and bears numerous eruptive craters, has at its lowest point an elevation of only 200 feet, or perhaps even less, whereas the crater summits reach a height of 400 to 600 feet. The altitude of Fugleberg we found by observation to be 490 feet; that of Egg Island was estimated at 400 to 500 feet.

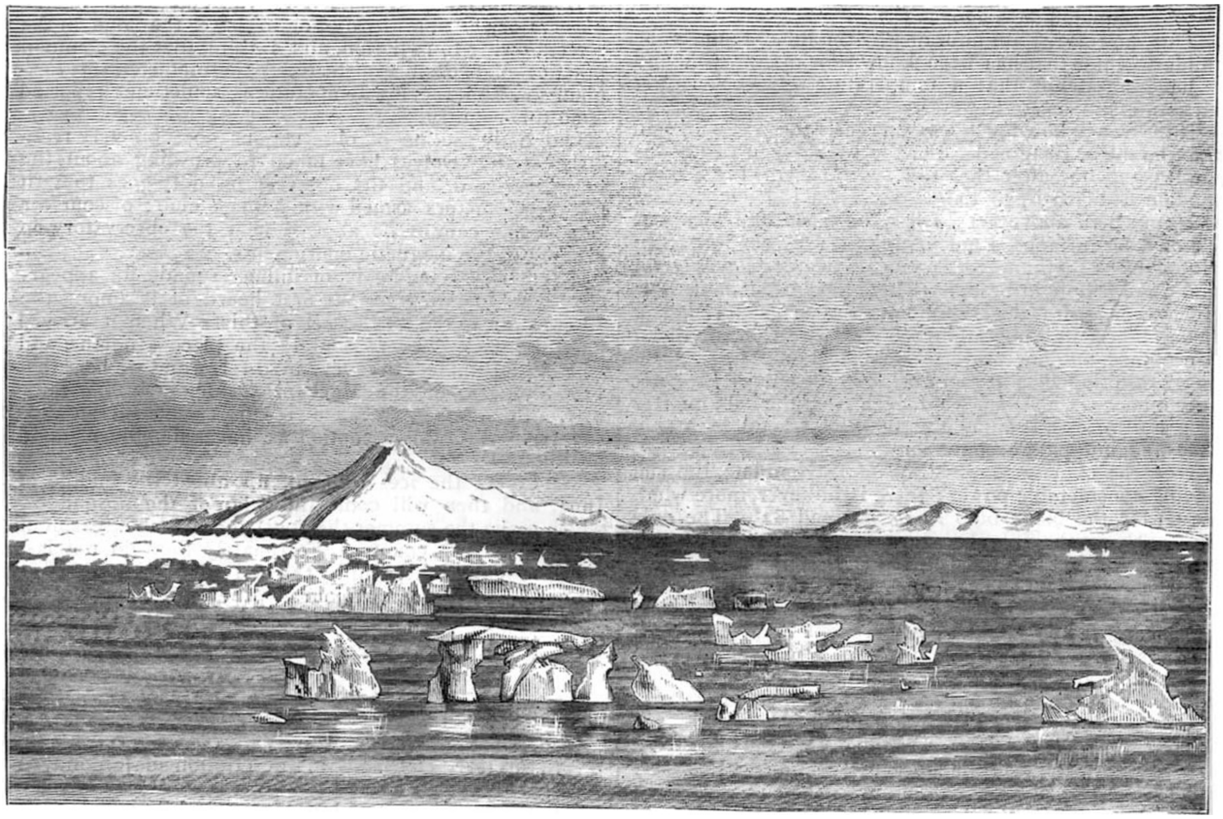

Fig. 4.

"As shown by Carl Vogt, the base of Mount Beerenberg is composed partly of layers of lava, and partly of layers of tuff, that would appear to have flowed or been discharged from the great central crater previous to the formation of the upper cone of ashes. The middle tract of the island exhibits a similar structure, and, to judge from its appearance, also the southern part. Above this stupendous mass of lava rise a number of small parasitic craters, the greater part of which have retained a conical form. Such, for instance, are Sars's crater, the crater east of the southern glacier, the Esk and Vogt craters, Danielssen's and Blytt's craters, and the craters in the vicinity of Guinea Bay. Fugleberg on the west coast, and Egg Island on the east, are no longer conical, the outer edge of the crater having given way and fallen into the sea. Some of the parasitic craters are built up of lava, and would appear to have sent forth considerable currents, as the Vogt and Esk craters; the summit of others consists of loose erupted masses, cinders, and ashes (rapilli), as the craters in the vicinity of Mary Muss Bay and Guinea Bay; others are composed of layers of tuff, tuff-conglomerate, and compact masses of lava, as the Fugleberg, and others again of ashes alone, as Egg Island and the Berna crater.

"The chief volcanic fissure in which Jan Mayen Island is built must obviously extend in the longitudinal direction of the land, parallel to the volcanic line of Mount Hecla. Meanwhile, the grouping of the parasitic craters would seem to intimate the existence of transverse fissures running from W.N.W. to E.S.E.; for in that direction there are, apparently, several rows of parasitic craters, as the Esk, Vogt, Berna, the Fugleberg, and Egg Island, Hoyberg, and the crater in the vicinity of the 'pilot-boat' (?). Must we regard it as mere accident that each of the terminal craters towards the south-east in the two first rows should have discharged ashes alone?

"Jan Mayen has no valleys of considerable extent; the large ravines in the northern part of the island are filled with glaciers, and the southern land would appear to be but little intersected by vales or ravines. Of brooks or rivulets very few have been observed. A characteristic feature, distinguishing the coast of Jan Mayen, are the fantastic-shaped rocks that in many places rise abruptly from the sea, of which we have mentioned several. They are no doubt in greater part fragments of lava detached from currents that had flowed into the sea.

"The coasts of Jan Mayen are, as previously stated, in many places lofty and precipitous. In some localities, however, there is a low expanse of foreshore consisting of lava, partially covered with sand. This foreshore, which is separately marked on the map, lies so low in places as to be covered with driftwood. Some localities, too, exhibit a low sandy beach, bestrewn with large quantities of driftwood, the jaws and vertebræ of whales, bits of wreck, and seaweed.

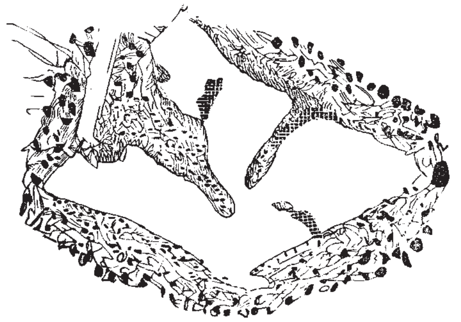

Fig. 5.

"Nowhere on the shores of Jan Mayen has a harbour been found that could afford a ship or a boat shelter in all kinds of weather.[1] Hence, to land is possible only with the sea comparatively smooth, which it rarely is, save when drift-ice encompasses the island. Specially noteworthy are the two lagoons, cut off from the sea by barriers of black sand, only a few feet high and a couple of hundred paces broad. They both contain fresh water, the surface of which lies but very little above that of the sea. The lagoon on the west side of the island is deep enough to afford a good harbour were the barrier cut through to a sufficient depth. The lagoon on the east side is comparatively shallow.

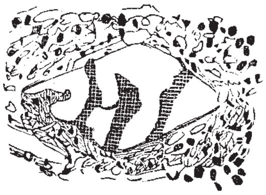

Fig. 6.

"Jan Mayen lies wholly within the Greenland Arctic current. At a depth of from 10 to 20 fathoms the temperature of the sea is all the year round below zero. In the winter there is frequently open water off the coasts of Jan Mayen, sealers often passing to the west of the island. The summer is naturally cold, from the presence of ice-cold water so near the surface of the sea. The northern part of Jan Mayen rises, at a height of about 2300 feet, into the region of perpetual frost. The upper cone of Mount Beerenberg is snow-capped, save on the steepest parts of its declivity, where the black mountain-wall is seen protruding. The base of Beerenberg is girt with a belt of snow, from which prodigious glaciers take their origin, nine of the largest reaching down to the water's edge. The southern part of the island would not appear to be glaciated. Large patches of snow are everywhere observed throughout the summer in the vicinity of the sea.

"Jan Mayen has but a meagre flora. Bright herbage, however, is not wanting; the green carpet of moss, in places of considerable extent, forms a striking and pleasant contrast to the black, brown, and red of the surrounding rocks. The plants collected by Dr. Danielssen on the isthmus south of Mary Muss Bay, are, according to Prof. A. Blytt, as follows:—

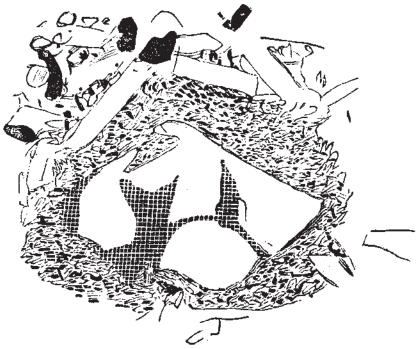

Fig. 7.

"*Saxifraga cæspitosa*, L.
" *nivalis*, L.
" *oppositifolia*, L.
" *rivularis*, L.
Ranunculus glacialis, L.
Halianthus peploides, Fr.
Cerastium alpinum, L.?
Draba corymbosa, R. Br.
Cochlearia officinalis, L.
Oxyria digyna, Campd.
Catabrosa algida, Fr.

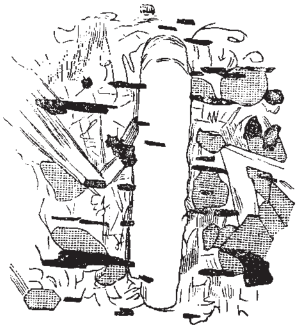

Fig. 8.

"Of mammiferous animals, the Polar Fox, *Canis lagopus*, is by no means rare on Jan Mayen. Of birds, Mr. Friele has noted the following species:—

"*Somateria mollissima*, Leach.—Rare.
Larus glaucus, Brün.—Common.
Fulmarus glacialis, Lin.—Exceedingly abundant.
Grylle Mandti, Licht.—Abundant.
Uria aara, Schlegel.—Abundant.
Mergulus alle, Lin.—Abundant.
Tringa maritima?

"If the land fauna of the island is meagre, that of the sea is proportionately rich, a fact which the numerous zoological memoirs published in this General Report will sufficiently attest."

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[1] Little Sand Bay would appear, according to the account in the "Zeespiegel," to be a good harbour for boats, protected as it is by an outlying chain of islets.

Fig. 4 again shows the island in its winter garb, and is from a drawing made by Lieut. Ring, R.N., when commanding the sealer *Capella*.

"We have Sars's crater, on the slope shelving towards Cape North-East; we see, too, the great glaciers on the north side, also Cape North-West and Muyen's Cross Cape, in a line with the point of view; and the low tract of the island, with the heights of the southern part, are boldly defined in the picture. The crater of Beerenberg, with its sunken edge on the north side, is also seen, and lower down a huge, cauldron-shaped depression, from which the great northern glaciers take their origin."

Some very interesting mineralogical specimens were brought from Jan Mayen, on which Mr. H. Reusch, of the Norwegian Geological Survey, reports. We reproduce illustrations of four specimens of olivine in basalt.

In Fig. 5 the surrounding rock exhibits a remarkably fine granulation in immediate proximity to the crystals, which it pierces in sac-like ramifications. In Fig. 6 discoloured glass is seen piercing the crystal from the surrounding rock, which has a fine granulation. In Fig. 7 the surrounding base is finely granulated. At the top of the figure is seen basalt of the dominant degree of granulation. Discoloured glass pierces the crystal from the rock surrounding it. In Fig. 8 the iron ore occurring as rod-shaped corpuscles has a definite position towards the crystal of olivine.—Magnified 360 diameters.

Dr. Mohn concludes his instructive account of the geography of this fruitful expedition by some brief observations on Bear Island and Spitzbergen, at various points of which the *Voringen* touched.

SCIENCE AT CAMBRIDGE

WE understand that Dr. M. Foster, who, upon his appointment as Professor of Physiology at Cambridge, ceased to be Prælector at Trinity College, addressed to the Master of Trinity the following letter, which perhaps may interest those of our readers who are not acquainted with the peculiar organisation of our old Universities.

Shelford, Cambridge, July 28, 1883

MY DEAR MASTER,—The University having done me the honour to appoint me to the newly established Chair of Physiology, my connection with the College as Prælector comes to an end, though I rejoice that I am still counted among the Fellows of the Society. I cannot let this opportunity pass without making some attempt to thank you, and through you the College, for all you have done for me during the thirteen years of my Prælectorship. You called me, a comparatively unknown young man, to the College in 1870; you not only at once gave me leave to follow out my own views as to what I ought to do, but from that time onward have constantly supported me, not simply with cordial approbation, but also with most material assistance.

I have reason to believe that many persons not conversant with the organisation and working of the University, are under the impression that the necessary expenses which my work has entailed have been provided out of University funds. But I am sure that the authorities of the University would be the last to wish that anything done by the College should be considered as done by the University. And as a matter of fact, when I say that I was allowed the use for four years of one room, and for ten years of two rooms, in the University buildings, and that during the last three years I have enjoyed the advantages of the admirable laboratory which has been built for me, with use of gas and water, I have mentioned all that I have received from the University, with the exception of grant of microscopes to the late Prof. Balfour and myself in common. Not only my own remuneration has come from the College, but all the really large expenditure involved in my teaching physiology, save what has been met by the fees of the students, has been provided for in one way or another by the College.

At the outset the College gave me a large grant of money for apparatus, and some years afterwards a second smaller grant. During the whole thirteen years I have received from the College an annual sum for the payment of my laboratory servants; and for several years past two demonstrators (one at a comparatively high salary), as well as during the past year three assistant demonstrators, have been paid partly from the tuition fund of the College, partly by funds which, though furnished by private liberality, cannot be wholly dissociated from the College. I think I may fairly say that I have never asked anything of you in vain. I might add that what you have done for me did not prevent you from also assisting our lamented Balfour, working in a closely allied branch of science, or, upon his sad death, from affording material help in carrying on the work which he left behind through aid given to Mr. Adam Sedgwick.

Let me assure you that I fully appreciate all the College has done for me; but perhaps after all I feel still more keenly the sympathy and kindness with which as a stranger I was first received among you, and which have made the thirteen years of my Prælectorship the brightest as well as the best years of my life.

Yours ever truly,
M. FOSTER

THE ISCHIA EARTHQUAKE

A SLIGHT shock of earthquake occurred in Casamicciola at seven o'clock on Sunday morning, at the Gurgitello, where that of July 28 created the most ruin, but it was limited to that spot, and caused no damage. It is reported that a fissure a kilometre in length and thirty kilometres in depth has opened on the south-west flank of Mount Epomeo. The smoke ejected from the *fumaroli* at the summit of the mountain has considerably diminished in quantity. The Naples Academy of Sciences has appointed a Commission to investigate the telluric conditions of Ischia.

The following communication from the *Times* correspondent at Rome is important:—

"From a second report made by Prof. Michele Stefano di Rossi, head of the Central Geodynamic Observatory at Rome, to the Minister of Agriculture, on the phenomena connected with the earthquake in Ischia, it appears that not only were there for some days beforehand very distinct premonitory signs at Casamicciola of the impending catastrophe, but that throughout the peninsula forewarnings, identical in character, were numerous and widespread. On the island of Ischia there was an extraordinary increase in the temperature of the thermal waters and in the violence of the *fumaroli* (*i.e.* the natural smoke funnels) at the spot called Monte Cito. These phenomena were noticed eight days before the catastrophe occurred. On these important points the evidence which Prof. di Rossi obtained is abundant. There is less conclusive testimony concerning the shrinking and consequent scarcity of the drinking water in the wells. But he has absolutely certified that, commencing from a period a fortnight anterior to July 28, many slight shocks of earthquake, of almost daily recurrence, were felt, and subterranean rumblings were heard. Phenomena identical with these preceded the earthquakes in Ischia in 1828, 1851, and 1881; and Prof. di Rossi emphatically states that had an observatory been established in Ischia after the earthquake of 1881, according to the advice he then gave, and the phenomena which manifested themselves at Cassamicciola from July 20 onwards been communicated to him at the Central Observatory in Rome, he would not have hesitated an instant in pointing out the imminent danger of an impending